I was impressed with the unsatisfactory state of our knowledge of atmospheric refraction. Two years later my experience at Poulkova, Russia, and at our Naval Observatory, Washington, seemed to justify my conclusion that astronomers who would improve their meridional measurements must investigate their local atmospheric conditions more thoroughly and to this end must have numerous surrounding meteorological observations. Hence in my inaugural Cincinnati address of May 1, 1868, I stated that with a proper system of weather reports the public need of forecasts could be met and that astronomy could also be benefited.

This suggestion was taken up by Mr. John A. Gano, president of the local chamber of commerce; a committee met me, approved my plans, and promised the expenses of a first trial. I had the total solar eclipse of August 7, 1869, on my hands, but immediately began to arrange for 40 voluntary meteorological correspondents. On my return from observing the eclipse at Sioux Falls City, I stopped at Chicago and formally invited the Chicago Board of Trade to join in extending the Cincinnati system to the Great Lakes, but this invitation was declined by the Chicago Board of Trade. An editorial in a Chicago evening paper of Monday, August 16, 1869, stated the scientific basis of our observatory work. I returned at once to Cincinnati, issued the first number of the Cincinnati Weather Bulletin promptly, as promised, on September 1, 1869; it contained a few observations telegraphed from distant observers and the "probabilities" for the next day. This bulletin was posted, in my own handwriting, prominently in the hall of the chamber; but I soon found below my misspelled "Teusday" a humorous line by Mr. ——— Davis, the well-known packer: "A bad spell of weather for 'Old Probs.'" This established my future very popular name "Old Probs."

My forecasts were treated very kindly by all. I had anticipated a slow increase in accuracy; I ventured to write my father in New York City "I have started that which the country will not willingly let die." I wrote a short note to the New York Times (or Tribune) telling them how useful we could be to their shipping. On September 3, 1869, I even ventured to offer a daily telegram by the French cable to Le Verrier as founder of the Bulletin Hebdomadaire de l'Association Scientifique, and who could fully sympathize with my hopes and plans. He realized the breakers ahead of me better than I. My daily telegram from Milwaukee came from the well-known Smithsonian observer and author, Prof. Increase Allen Lapham. He had known and appreciated the works of Espy, Redfield, Loomis, and others, but he had become absorbed in other studies; he now urged the local Milwaukee society to do something for Lake Michigan. His friends were just about to go to the Richmond meeting of the National Board of Trade; there they met William Hooper and John A. Gano. These merchants of Cincinnati found that they had the same idea as H. E. Paine, of Milwaukee, i. e., that the Federal Government should develop the Cincinnati enterprise and make it useful to the whole country. The National Board of Trade indorsed this idea; Prof. Lapham, of Milwaukee, drew up some statistics of storms and destruction on the Lakes; the Hon. Halbert E. Paine prepared Public Resolution No. 9; we each put our shoulders to the wheel and behold on February 9, 1870, the Secretary of War was authorized to carry out this new duty. I had spent a year in finding stations, voluntary observers, and telegraph facilities; every old classmate or friend of progressive meteorology had helped the new idea. The work had now passed out of my hands. I saw that I must soon go back to the observatory work that I had undertaken—the rejuvenation of the famous old Cincinnati observatory—but there was much more to be done. A letter from the Chief Signal Officer, United States Army, Gen. Albert J. Myer, asked for all possible cooperation. The officials of the Western Union Telegraph Co. offered the observatory the same free daily weather reports that they had for 20 years been giving to the Smithsonian Institution and the daily press; so I continued temporarily to make and publish the Cincinnati Bulletin, but in a much simpler form and without forecasts. This continued until May 10, 1870, when I was married, and the preparation of the midnight bulletin passed over to the officials of the local telegraph office. It was continued in this shape until November, 1870, when the tridaily bulletins of the Army Signal Service began. With the help of ——— Williams, who was in charge of the Western Union office, I printed in October, 1869, a code of cipher, and should have used this code for economy, had not the Joint Resolution of February 9, 1870, anticipated further reports by my own stations. This code was subsequently greatly improved by Weather Bureau men, and particularly by Gen. A. W. Greely, and it is still in use.

The manifolded duplicate copies and the printed copies of the daily Cincinnati Observatory Bulletin were distributed until the chamber of commerce no longer needed to support it; then Mr. Williams devised a simple form of manifold map that was a great improvement on my original tabular form of daily reports. This map was soon adopted by the Signal Service, but was itself displaced in turn by the present handsome daily lithographed chart. Without the help of Armstrong and Williams and the new manifold method patented by J. Jones we could not have promptly responded to the needs of our friends.

By November, 1870, I had gone to New York and prepared to go as astronomer on one of the Panama Canal surveys, but I gave this up and should have returned soon to Cincinnati had I not, in December, received a letter from Gen. Myer stating that he wished to see me. My work with him in the Weather Bureau of the Army Signal Service began January 3, 1871. After a month's practice it was decided that my forecast would evidently more than fill the popular expectations and tridaily publications began at once. The term "probabilities" then became official, as it had begun in 1869, and in those days it was appropriate; but we have long since used and accepted the word "forecast."

The subsequent development of the service under Gens. Myer, Hazen, and Greely, and Profs. Harrington, Moore, and Marvin may be gathered from their special or annual reports. The service has been greatly favored by the hearty cooperation of many men of knowledge, skill, and enthusiasm.

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USE OF THE TERM "INDIAN SUMMER" IN 1778?

It is gratifying to learn from a recent paper by Mr. Horace E. Ware,[1] read before the Colonial Society of Massachusetts that the search for facts bearing on the origin of the term "Indian summer" as applied to certain phases of our fall weather, keeps alive.

Mr. Ware's paper cites a poem of 1815, by Philip Freneau, as the first appearance of the term in *poetry;* he also quotes Mrs. Sigourney's poem on the subject, written before and published in 1849.

[1] *Ware, Horace E.* Notes on the term "Indian summer." Pub., Colonial Soc. of Mass., Cambridge, Mass., 1916, 18: 123–130.

In the discussion of Mr. Ware's paper Mr. Albert Matthews remarked that while heretofore [2] the earliest known instance of the term "Indian summer" occurred in the Journal of Maj. Ebenezer Denny while at Le Bœuf, near the present city of Erie, under date of October 13, 1794, he could now quote an example earlier certainly by 7 years and possibly by 16 years. Mr. Matthews continues as follows:

In a letter dated "Germanflats, 17 janvier 1778," Crevecœur gives a "Description d'une Chute de Neige, Dans le Pays de Mohawks, sous le rapport qui interèsse le Cultivateur Américain," in which occurs the following passage:

"Les grandes pluies viennent enfin & remplissent les sources, les ruisseaux & les marais, pronostic infaillible; à cette chûte d'eau succède une forte gelée, qui nous amène le vent de nord-ouest; ce froid perçant jette un pont universel sur tous les endroits aquatiques, & prépare le terre à recevoir cette grande masse de neige qui doit bientôt suivre: les chemins auparavant impracticables, deviennent ouverts & faciles. Quelquefois après cette pluie, il arrive un intervalle de calme & de chaleur, appelé l'*Été Sauvage* ce qui l'indique, c'est la tranquillité de l'atmosphère, & une apparence générale de fumée.—Les approches de l'hiver sont douteuses jusqu' à cette époque: il vient vers la moitié de novembre, quoique souvent des neiges & des gelées passagères arrivent longtems auparavant." [3]

TRANSLATION.

At last come the heavy rains, filling the springs, the creeks (ruisseaux), and the marshes, an infallible sign; following this fall of water comes a severe frost brought to us by the northwest wind; this piercing cold builds a universal bridge over the watery places, and prepares the land for that great mass of snow which should soon follow it; the roads, which have been impassable heretofore, become open and convenient. Sometimes the rain is followed by an interval of calm and warmth which is called the *Indian summer* (l'Eté Sauvage); its characteristics are a tranquil atmosphere and a general smokiness. Up to this epoch the approaches of winter are doubtful; it arrives about the middle of November, although snows and brief freezes frequently occur long before that date.—C. A., jr.

"Germanflats" is the present Herkimer, N. Y. The author was so careless about certain matters that we can not be sure that his letters were actually written at the dates assigned, but the work from which the passage is cited was published in 1787.[4]

PROF. KITTREDGE'S THEORY.

While on this subject of Indian summer it may be of interest to refer to yet another effort to explain the origin of the term. Prof. George L. Kittredge [5] some years ago discussed the question and offered several suggestions. He thinks, for example, that it is too far-fetched to explain "Indian summer," as haziness which was originally due, in part, to brush and forest fires kindled by the American Indians in November.

Far more reasonable is the conjecture that the name alludes to the proverbial deceitfulness and treachery of the natives. * * * Or possibly we should think rather of their equally proverbial instability. Nothing is more fickle than the weather in Indian summer; though this is a quality that might be predicated of our weather in general. * * *

Or, finally, * * * it is conceivable that Indian summer was at first equivalent (among the earliest English immigrants) to "*fool's* summer." If so, we seem to have a parallel to the "Old Women's Summer" of the Germans, and it may be also to the "go-summer" of the Scots, if this is a corruption of "Goose summer," as scholars suppose. * * * Nothing impressed the settlers more than the folly of the red men in certain matters. * * * "Fool's summer," though not pretty, would be appropriate enough, and would range well with "fool's gold" for iron pyrites, "fool's parsley" for the poisonous lesser hemlock, and *ignis fatuus*, or "fool's fire," for the will-o'-the-wisp.

[2] See his paper in this REVIEW, January and February, 1902, 30: 19–28, 69–79.

[3] Lettres d'un Cultivateur Américain * * * depuis l'Année 1770 Jusqu'en 1786, par M. St. John de Crèvecœur, Traduites de l'Anglois, Paris, 1787, 1 294. The description fills pp. 289–314.—*A. Matthews.*

[4] In his Letters of an American Farmer, published in London in 1782, Crèvecœur does not mention the Indian summer. My attention was called to the passage in the text by Mr. Franklin B. Sanborn's paper on St. John de Crèvecœur, the American Farmer (1735–1813), printed in 2 Proceedings Massachusetts Historical Society, xx, 32–83. Mr. Sanborn shows that Crèvecœur was often inaccurate, remarking in one place: "But dates were never St. John's forte. He misstated the ages of his children by two years, and dedicated the French edition of his Lettres d'un Cultivateur Américain to Lafayette from Albany, 17 mai, 1781, though at that date he was in England" (p. 34, note: cf. pp. 36, 37, note, 45, 52–53, 73–74).—*A. Matthews.*

[5] *Kittredge, George Lyman.* The Old farmer and his almanack. Boston. Wm. Ware & Co., 1904. xiv, 403 p. illustr. 8°. N. B., pp. 191–198.

NEED FOR PAN AMERICAN METEOROLOGICAL COOPERATION.

[In the General Report on the Final Act of the Second Pan American Scientific Congress, held in Washington, Dec. 27, 1915–Jan. 8, 1916, prepared by Mr. James Brown Scott, reporter general to the congress, we find the following commentaries on articles 5 and 6 of the resolutions and recommendations (pp. 59–61.]

Article 5 [recommends that] proper steps and measures be taken to bring about in the American Republics a *general use of the metric system* of weights and measures, in the press, magazines, newspapers, and periodicals, in educational and scientific work, in the industries, in commerce, in transportation, and in all the activities of the different governments.

To the citizens of the Latin-American Republics this article will seem well-nigh meaningless, for in the Western Hemisphere the English system of weights and measures obtains only in the United States and the English-speaking colonies, whereas the remaining American republics and the greater part of the Eastern Hemisphere use the metric system. Measures and weights are, however, an important part of the vocabulary in international relations. The English is not nearly so convenient and simple as the metric system, either in commercial or scientific work. The use of the English system in the United States is one of the important obstacles, in the opinion of the American delegates, to a closer commercial and scientific intercourse and cooperation between the United States and the other American Republics. Therefore, the adoption of the metric system by the United States would be a great benefit economically to the general public, and it is believed that it would not be without importance in promoting good will and mutual understanding. .

ARTICLE 6 [the congress] confirms the resolution recommended to the American Republics by the First Pan American Scientific Congress regarding *the installation of meteorological organizations* to serve as a basis for the establishment of a Pan American meteorological service, and expresses the desire that the Republics not yet possessing organized meteorological services establish such as soon as may be practicable.

As questions of international importance, the various topics under meteorology and seismology were considered in the Second Section of the congress. The needs especially of the organization of governmental services for continuous observation of atmospheric and terrestrial phenomena by means of common methods, intercomparable apparatus, and common units were dwelt upon. Much attention was given to the modes of organization and conduct of existing weather bureaus, to methods of forecasting weather, and to the increasing importance of the application of these as an aid to agriculture, navigation, and land transportation of perishable products. Much attention was given also to consideration of secular phenomena in meteorology and to their effects in the habitable as well as in the uninhabitable parts of the globe.

One of the most interesting topics considered as a by-product of the work of the Second Section was that of the desirability of forming an unofficial international association of meteorologists and seismologists for the mutual exchange of ideas and experience arising from these sciences. It was thought that such an organization might accomplish for meteorology and seismology results similar to those which have proved highly beneficial during the past two centuries in the [other] physical sciences.

It will be observed by persons familiar with the Pan American scientific congresses, and, indeed, it is expressly stated in the recommendation itself, that the